CLAIMS

What is claimed is:

1. A device comprising a resonator formed of a piezoelectric layer sandwiched between two metal electrodes, the resonator being laid on a suspended beam, and

means for deforming said beam by a difference in thermal expansion coefficients.

2. The device of claim 1, wherein the means for deforming the beam comprise heating elements and one or several blocks in contact with the beam, the blocks being formed of a material having a thermal expansion coefficient different from that of the beam.

3. The device of claim 2, wherein the heating elements are placed within the beam.

4. The device of claim 1, wherein electrodes are placed in the beam opposite to other electrodes external to the beam, the electrodes being connected to a voltage source capable of biasing the electrodes to maintain the beam deformation.

5. The device of claim 4, wherein the beam is placed above a cavity formed in a substrate, the external electrodes being placed in the cavity.

6. An integrated circuit comprising the device of claim 1.

7. A device, comprising:

a bridge composed of a first material;

a resonator positioned on said bridge, said resonator having a piezoelectric layer and first and second electrodes coupled to the piezoelectric layer;

a thermal responsive material positioned on said bridge, the thermal responsive material having a thermal expansion coefficient that is different from the bridge's thermal expansion coefficient; and

a heating element positioned adjacent the thermal responsive material.

8. The device according to claim 7 wherein the thermal responsive material is a metal.

9. The device according to claim 7 wherein the thermal responsive material is an aluminum-based material.

10. The device according to claim 7, further including:

a cavity positioned under the bridge.

11. The device according to claim 7 wherein the bridge is composed of silicon nitride.

12. The device according to claim 7 wherein the thermal responsive material is positioned on an upper surface of said bridge and has a larger thermal coefficient of expansion than said bridge, thereby causing a central region of the bridge to bend downward when the device is heated.